

Floodplain Management -- Risks

Session 15: What are Hazards?

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What are Hazards?

Objectives:

1. Discussing hazards in the context of risk.
2. Define terms related to flood hazard and correctly use hazard terminology.
3. Prepare a general flood hazard assessment.

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Hazards in the context of risk

- Risk can be visually depicted using **Geographic Information System (GIS)** analysis.
- Risk is a function of:
 - the **frequency** and **impact** of the hazard.
 - the relationship among the **hazards**, **vulnerabilities**, and **capabilities**.

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Defining Hazards

“It was a dark and stormy night; the rain fell in torrents—except at occasional intervals, when it was checked by a violent gust of wind which swept up the streets (for it is in London that our scene lies), rattling along the housetops, and fiercely agitating the scanty flame of the lamps that struggled against the darkness.”

Edward George Bulwer-Lytton, *Paul Clifford* (1830)

Flood, Amite River LA



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What are Hazards?

- **Natural conditions** such as weather and seismic activity.
- **Human interference** with natural processes such as a levee that displaces the natural flow of floodwaters.
- **Human activity and its products** such homes on a floodplain.

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Defining Hazard Terms

FEMA

- *A hazard* is "a source of potential danger or adverse condition."
- *A hazard event* is "a specific occurrence of a particular type of hazard" which in our case of flooding.
- *Hazard identification* is "the process of identifying hazards that threaten an area."

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Defining Hazard Terms

American Planning Association (APA)

- A **hazard** is "an event or physical condition that has the potential to cause fatalities, injuries, property damage, infrastructure damage, agricultural loss, damage to the environment, interruption of business, or other types of harm or loss."
- **Hazard identification** is "the process of defining and describing a hazard, including its physical characteristics, magnitude and severity, probability and frequency, causative factors, and locations or areas affected."

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Defining Hazard Terms

Deyle et al.

- **“Hazard refers to an extreme natural event that poses risks to human settlements.”**The likelihood of a hazard is usually calculated on an annual basis. Example: the 1% chance flood is a flood that has a 1% chance of occurring or being exceeded in any given year.
- **Hazard identification** "defines the magnitudes (intensities) and associated probabilities (likelihood's) of natural hazard that may pose threats to human interests in specific geographic areas."

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Defining Hazard Terms

Deyle et al. (continued)

- **hazard identification** "is the process of estimating the geographic extent of the hazard, its intensity, and its probability of occurrence."
- **Intensity** is the "damage-generating attributes of a hazard." Example: the Saffir/Simpson scale characterizes hurricanes from 1 to 5; Intensity of a flood: water depth and velocity.

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Defining Hazard Terms

White (1974)

- a **natural hazard** as "an interaction of people and nature governed by the coexistent state of adjustment in the human use system and the state of nature in the natural events system."

L.R. Johnston 1992

- a **flood hazard** is "the potential for inundation that involves risk to life, health, property, and natural floodplain values."

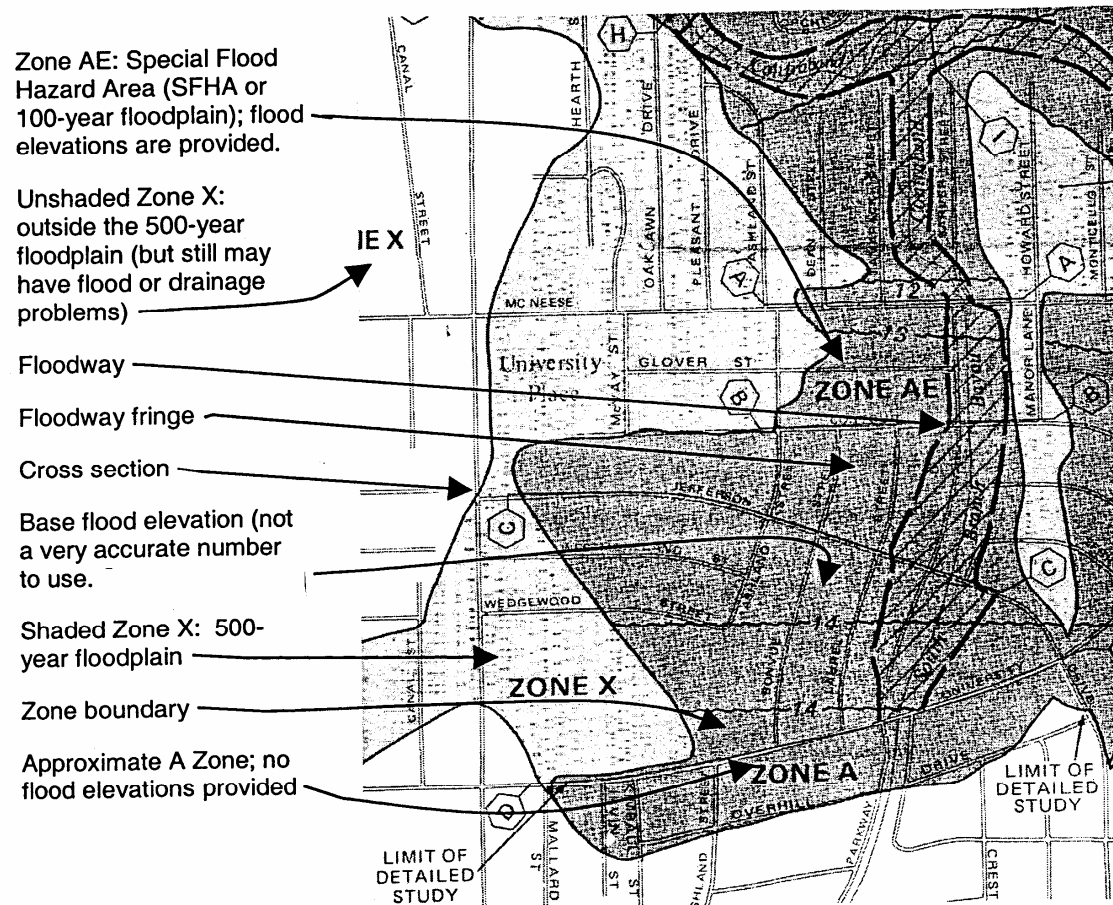
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NFIP Definitions

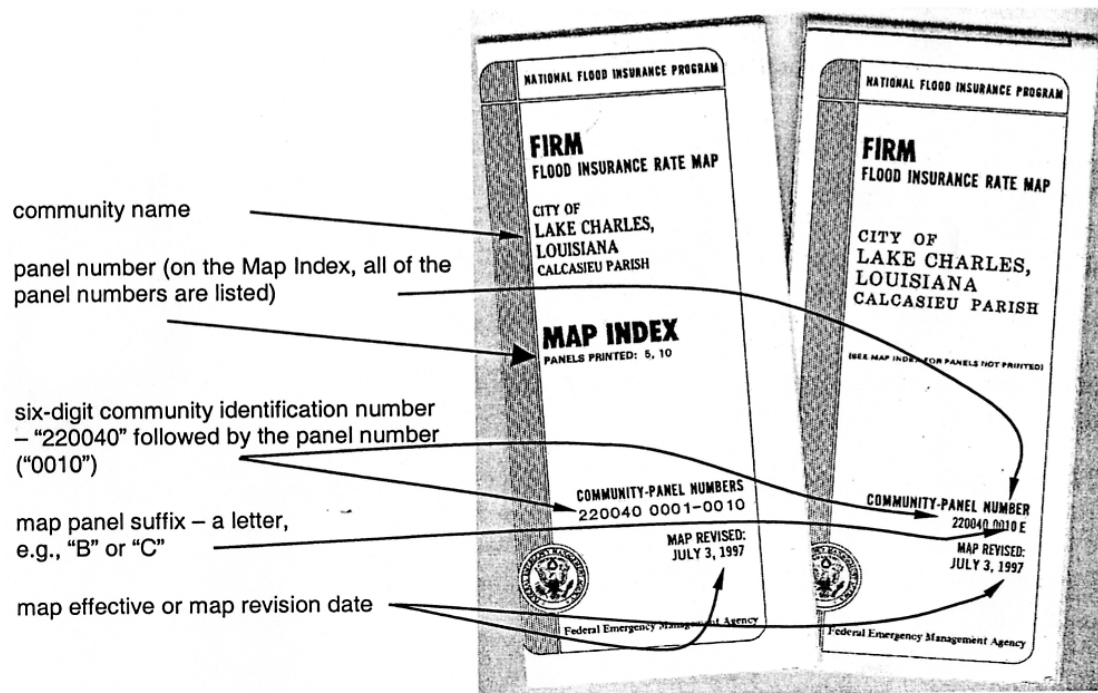
National Flood Insurance Program (FEMA)

- defines a floodplain as the area adjacent to a watercourse that has a 1% chance of becoming wet in any single year. This is also referred to as the 100-year floodplain. For development of critical facilities it is the over bank area that has a .2 percent chance of becoming wet in one year or the 500 year floodplain.

New FIRM format -- Lake Charles

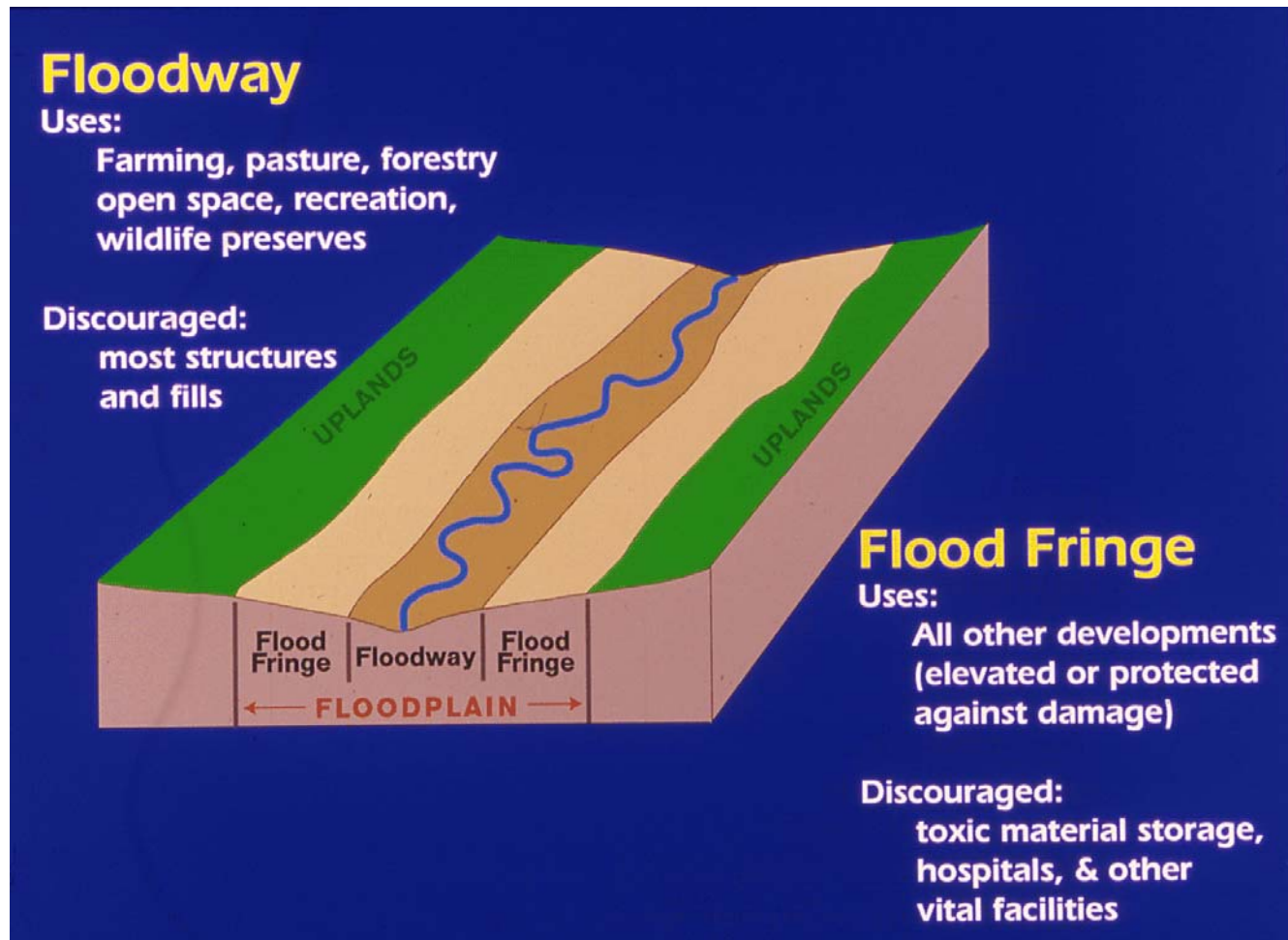


Index Title boxes – Lake Charles

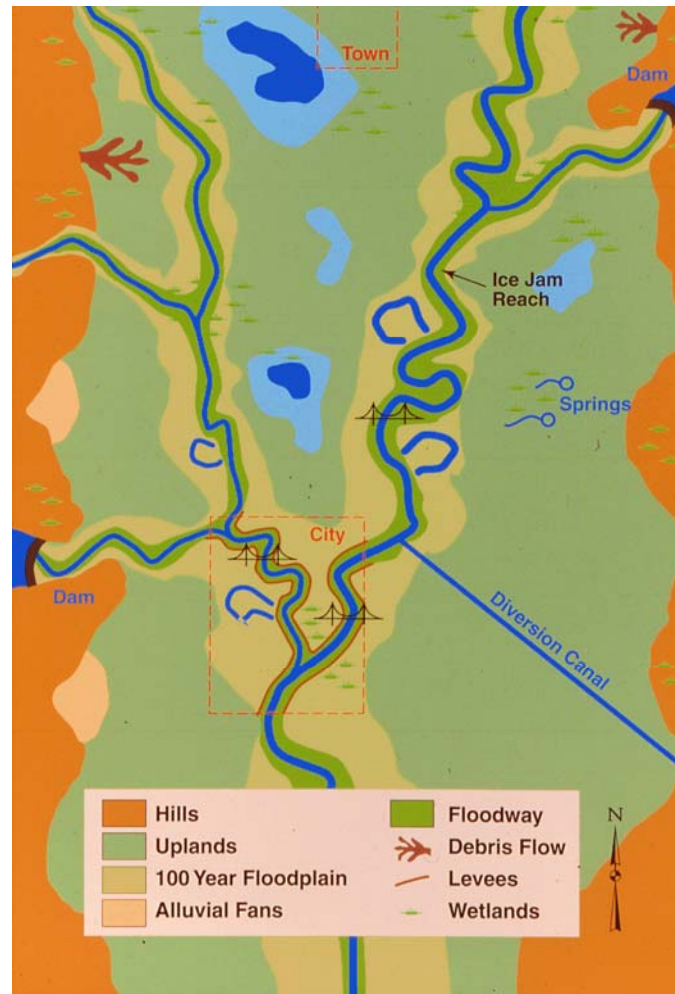


Title boxes to Lake Charles' FIRM Index and Panel 10

Regulatory Floodplain



Map of Floodplain



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Student Exercise

- Using other sources, expand the Glossary to show the range of meanings for these terms. Each definition should include a complete citation to the source document.
- Identify the information shown on a FIRM, describe the information and what this tells about flooding in the area.
- Prepare a general flood hazard assessment(see outline).

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Flood Hazard Assessment Exercise

1. Community setting (baseline conditions)
2. The flood event
3. Natural environment
4. Human-built environment
5. Social/political/organizational systems
6. Vulnerability assessment in next session